Oil Spill Emergency Response

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Michigan 4-H Youth Conservation Council

2013 Michigan 4-H Youth Conservation Council Focus Statement:

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Introduction:

In December 2012, the Michigan 4-H Youth Conservation Council debated a variety of conservation issues facing the state of Michigan. Out of these, oil spills was voted as the 2013 topic with a focus on the current legislation regarding the Michigan Department of Environmental Quality's ability to respond to oil spills. The council is concerned about the lack of an on-scene coordinator and the restrictions on the coordinator's abilities to act in the case of emergency.

Oil spills are defined by the unintentional leaking of oil into the environment. These occurrences can have severe impacts on humans and the environment. Many of these impacts in addition to the impacts on the overall economy of the location of the spill are described in the following paper.

Though oil spills are a severe environmental hazard, they are a downfall of an economically necessary resource. However, the response to oil spills is malleable. Currently, the EPA, under CERCLA, has the ability to wave permits and gain access to any hazardous zone. The MDEQ does not possess this same authority and it hinders their reaction time and capabilities. Additionally, state responders are required to ask companies to respond to spills, while EPA responders can demand any documentation or assistance from the responsible company.

Pipelines
Jerry Dunham

There are hundreds of thousands of miles of pipelines across the United States. Pipelines carry about two-thirds of the oil and petroleum products transported annually. A pipeline carrying 150,000 gallons of oil per day is equal to 750 tanker trucks or 225 train cars per day. Pipelines have a lower spill rate per barrel transported than other modes of transportation. Interstate pipelines deliver about 11.2 billion barrels of oil per year. Pipelines are the safest and cheapest way to transport oil.[1]

The discovery of oil in Pennsylvania, in 1865, lead to the first oil pipeline in the United States. Pipelines became a common method of moving oil in the early 1900's when oil was found in Texas, Oklahoma, and Kansas. Before World War I, pump stations were spaced out about every 30 miles. Today, the technology allows the manufacture of large diameter and more efficient pipeline systems. The vast amount of petroleum is now transported by highly automated systems. This is reducing the number and volume of oil spills.

Oil pipelines transport crude oil from oilfields to refineries. At the refineries, the oil is turned into dozens of petroleum products that we use every day. Products such as gasoline, home heating oil, jet fuel, diesel fuel, and the raw materials for fertilizer, chemicals and pharmaceuticals. The refined products are then transported to de~~s~~pots where they are distributed to companies and consumers.[2]

Pumps move the oil through pipelines. Pumps are spaced out about every 20 to 100 miles depending on terrain. Most pumps are driven by electric motors. Pipeline employees using computers; remotely control the pumps and other aspects of pipeline operations. Most pipelines are operated and monitored 365 days a year, 24 hours per day by computers and trained operators. Oil in the pipelines flows at speeds of 3 to 8 miles per hour. Different types of petroleum products or grades of oil are transported through the same pipeline, so pipeline companies use a space between the different products called a batch distance. The batch will mix the two different types of oils making a transmix. The transmix has to be put into a different holding tank.[3] Pipelines are a crucial and necessary asset to the oil industry.

Economic Value of Pipelines
Margaret Spens

Pipelines are an important method of transportation for the oil and gas that most countries use today. However, problems with pipelines can sometimes be the cause of disastrous events, as we have seen in the past. The economic effects from pipelines can determine if a city or town grows or dwindles. Although the presence of pipelines can produce negative consequences to areas known for their historic and natural beauty, the economic value of pipelines primarily influence many places around the world positively.

Pipelines are necessary to maintain the everyday lifestyle demanded by many people and businesses. Pipelines carry the most important source of energy for the United States, which is oil, petroleum, and natural gas. Oil is used in the production of gasoline for motor vehicles, or for other works of transportation. It is also used for heating and cooling homes, and energy for businesses. Many products, for example, plastic, clothing, cosmetics, and pharmaceuticals are made from products that flow through pipelines. Natural gas is another important product that

moves through pipelines. It supplies 25 percent of the United States' energy. The energy produced by natural gas is used for heating and cooling, and powering companies.[4]

Besides the various products that ~~are~~ used oil for their production, the oil that flows through pipelines has other economic values as well. Pipelines can create jobs and increase the transfer of goods and services. According to the Detroit Heavy Oil Upgrade Project (DHOUP) 2010, the Marathon Petroleum Company's (MPC) projected $2.2 billion investment in the DHOUP will generate a projected $230 million in new tax revenues for the city of Detroit through year 2030. In addition, there is predicted millions of dollars in spin-off spending going to Michigan and its local communities. The project will create approximately 60 new full time refinery jobs and 75 additional full time contractor positions, in addition to the 400 workers and 160 contractors already employed at the Detroit refinery. The new hires will add an additional $16.5 million to the refinery's annual payroll of $74 million. Temporary construction craft workers will range from 500 to 1,300 workers a day for the balance of construction. The peak of 1,300 workers is anticipated in the fall of 2011. These will consist of primarily union jobs and total construction wages will exceed $350 million by the time project is completed.[5]

Pipelines also help consumers all around the United States. Pipelines within North America are lowering prices of crude oil, gasoline, and jet fuel. Pipelines are also a more efficient and cost effective source of transportation of oil than the alternative trains and trucks. It costs about $2 for a barrel of oil to travel across the country by pipeline, compared to approximately $12 a barrel by train. Regional trucking costs in the Northeast area add about 20-30 cents per gallon, although prices could spike higher during a supply shortage, compared to only 4 cents per gallon by pipeline. [6]

In conclusion, pipelines have very high economic value. Our council recommends that pipelines are not constructed in areas that directly surround an area of businesses or residential district. We also recommend that pipelines be monitored closely relative to maintenance and safety operations in order to prevent disasters and any damage to the surrounding communities, land, and wildlife in those areas.

Oil Spill Prevention Plan

Mallory Ramelis

The term oil spill is typically used to describe marine spills. Oil spills can happen on land, creating much more damage. The oil can soak into the ground infecting water wells and becoming a major health hazard.

There are four main types of response techniques; mechanical containment or recovery, chemical and biological methods, physical methods, and scare tactics. Mechanical containment or recovery is what the US primarily uses. The equipment used is a variety of booms, barriers, and skimmers. This also includes natural and synthetic sorbent materials. On the chemical side of things, they help contain the oil by using dispersing agents and gelling agents. The biological agents have the ability to help recover fragile areas such as wetlands. The physical aspect consists of bulldozing, pressure washing, and raking. The natural processes of evaporation, oxidation, and biodegradation can help in the clean-up process, but that is not enough. Scare Tactics are a way to protect birds and animals by keeping them away. Crews have propane scare-cans, floating dummies, and helium-filled balloons to scare wildlife from the area.[7]

The Occupational Safety and Health Administration (OSHA) is the main federal agency charged with the enforcement of safety and health legislation.[8] In Wisconsin, the OSHA

program requires facilities to contain the necessary equipment to help prevent an oil spill. The SPCC (Spill Prevention, Control and Countermeasure) this is part of the EPA's plan to help prevent oil spills instead of reacting to the spill after it already happens and creates the damage to the environment. Under the certain circumstances a facility must have a written SPCC Plan:

- Storage capacity of oil > 1,320 gallons (includes combined storage capacity of all containers 55 gallons or larger); or
- Storage capacity of underground (buried) oil tanks > 42,000 gallons that are not otherwise regulated; and
- Due to the location of the facility, a spill could potentially impact a navigable waterway.[9]

Enbridge's 318,000 barrel per day Line 14 pipeline, this line carries light Canadian crude to the Chicago-area refineries, was shut down after an approximate 1,200 barrels of oil leaked out into the environment. The spill was discovered Friday evening, and Enbridge had staff there early Saturday morning. This is possible because Wisconsin has a set plan and procedures to spill response.[10]

The council recommends that Michigan create set plan and the position to be able to go onto the job site and require the spiller to adequately respond to the spill. As well as that the facilities that hold oil be required to store booms and other response equipment in preparation of a spill.

On Scene Coordinators
Dakota Hewlett

When an oil spill happens, the company responsible for the release and local emergency response are the first line of defense against disaster. Many state agencies stand ready to support or take control of the response operations if the incident is beyond local capacities. In cases where a local government performs emergency action in response to a spill, but does not have emergency response funds budgeted, the EPA will operate the Local Governments Reimbursement program that will reimburse local governments or Indian tribes up to $25,000 per incident.

If the amount of hazardous substance or oil spill exceeds an established reporting amount, the organization responsible for the release or spill is required to notify the federal government's National Response Center (NRC). Once the report is made, the NRC will notify an EPA or U.S. Coast Guard On-Scene Coordinator (OSC), based on the location of the spill. The OSC will determine the status of the local response actions and monitor the situation to determine whether federal involvement is necessary or not. The OSC can decide that the local action is sufficient and that no additional federal action is needed. If the spill is large or complex, the federal OSC may remain on the scene to monitor the response, and advise on the use of equipment.[11]

An On-Scene Coordinator (OSC) is an Environmental Protection Agency (EPA) official who is responsible for monitoring or directing responses to oil spills and hazardous material spills reported to the federal government. The OSC supervises efforts and supports other response factions. Both the EPA and U.S. Coast Guard have On-Scene Coordinators and depending on where the issue happens, will respond accordingly. The EPA's OSCs usually have responsibility for spills and incidents in inland areas and waters while The U.S. Coast Guard

OSCs take care of coastal waters and the Great Lakes. On-Scene Coordinators will fulfill the following responsibilities in the course of response to a spill or release: (1) assessment; (2) monitoring; (3) response assistance; and (4) evaluation.

Before starting actions during a spill the OSC will do an assessment of the area and all factors involved. Assessment involves determining the size and nature of the incident, any potential hazards, and the resources they will need to contain and clean up the spill. The OSC will also assess the capacity of the responsible party and the local authorities to handle the response correctly. The assessment is then used to determine need for personnel, equipment, or any other resources to effectively and correctly control and clean up the spill.

Most releases or spills are small and are taken care of and cleaned up by the responsible party or are handled by local agencies like fire departments. Monitoring includes those actions that are taken to make sure that the control and clean up a chemical release or oil spill are appropriate. Monitoring can be done from the site when needed or from an office if the situation is mostly under control. In the case of an oil spill, the OSC is required to monitor the response if the spill poses a substantial threat to health and welfare of the public due to the nature of the spill (size and other characteristics).

After a spill has been assessed, the OSC decides if federal assistance is needed to help control and contain it. If the OSC decides that federal assistance is necessary, they will get resources such as personnel and equipment. If resources are not available for the incident, the OSC decides who pays and can secure federal funding either from the Superfund trust fund for hazardous substance releases or the Oil Spill Liability Trust Fund for oil spills. This ensures that cleanup will not be hindered by the lack of availability of personnel or equipment from the local, state or responsible party resources.

Evaluation of response actions provides the EPA with data that is useful for designing or improving their spill response plans. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) require the OSC to report all activities that happen during and after the response. For example, the OSC is required to have a report that tells the actions used to remedy the spill and the level of assistance provided by local, state, and federal agencies. These reports can be used to distinguish problem areas and be shared with other agencies that can make recommendations for improvement.[12]

The OSC can ask for additional help to respond to a spill, such as outside contractors, technical support from EPA's Environmental Response Team, or Scientific Support Coordinators from EPA or the National Oceanic and Atmospheric Administration. The OSC also may seek support from the Regional Response Team to access special skills or to provide further support. In addition, the National Response Team stands ready to provide backup policy and logistical support to the OSC and the RRT during an incident[13]

On Scene Coordinator Training
Cheyenne Hewlett

An On Scene Coordinator (OSC) needs to know what exactly their job is and what equipment they would use and how to use it. That’s where training comes in. There are many different kinds of training for example, safety, equipment and leadership training.

All EPA OSCs must meet certain health, safety, and environmental training requirements (specified in EPA Order 1440.2, regional-specific programs, and the Occupational Safety and Health Administration (OSHA) regulations (29 CFR 1910.120 (e) (3)-(9)). OSHA requires a 40-hour health and safety course that includes respirator instruction and fit testing for employees who may be expected to use respirators, and a minimum of three days actual field experience under the direct supervision of trained, experienced personnel. A baseline medical evaluation in accordance with the Respiratory Protection Standard 29 CFR 1910.134 is necessary in order to participate in this training.

Equipment training is also a big part of the process. In general, OSCs need to be trained in each type of equipment that they would use in order to be proficient. This requires usually a 4 to 8 hour initial class, and then a yearly refresher of 1-2 hours per piece of equipment. More complicated equipment may have longer training.

Another big part of being an OSC is leadership and scene coordinator training. There are several other types of training that OSCs undergo, such as training to spend federal money in support of a Federal response, this is called warrant authority training by which there are continuing education courses to keep the warrant authority. In addition, under EPA Order 3500.1 there is training for all EPA personnel who conduct compliance inspections/field investigations. In addition to doing field inspections, OSCs conduct oil spill related inspections under the Spill Prevention, Control, and Countermeasures (SPCC) and Facility Response Plan (FRP) program under the Clean Water Act (CWA) and the Oil Pollution Act (OPA). Also, OSCs receive Homeland Security training on the National Incident Management System (NIMS) and the Incident Command System (ICS). Also, there is an established requirement of 80 hours of professional development training each year for EPA OSCs to ensure effective job performance.

Trainings are generally internally conducted on an annual basis and also some are available online through Trainex.org. EPA OSCs go through an approximate 2-year mentoring program when they first become OSCs or are hired as OSCs. This generally includes some of the more detailed trainings and shadowing/learning from a senior OSC.[14]

On Scene Coordinator Equipment
Randi Rice

There is a lot of equipment required for cleaning up an oil spill. The most needed is safety equipment to keep workers safe from the hazardous materials in the oil. Respirators help keep workers from breathing the hazardous fumes emitted from the crude oil. There are two main types of respirators: air-purifying respirators, which use filters, cartridges, or canisters to remove contaminants from the air you breathe, and atmosphere-supplying respirators, which provide the worker with clean air from an uncontaminated source.[15] Face shields are used to protect the workers from any flying pieces that may harm their face. These are used with safety goggles to apply full protection to the worker's face. Kevlar sleeves protect the forearms from injury. Finally chest/hip waders are used so that workers may walk into oil and water but be fully protected from harmful substances. Air-borne contaminates are also a major threat to workers. Direct reading instruments are used to monitor the air for these contaminates. Direct reading instruments provide information at the time of sampling, enabling rapid decision-making.[16] Equipment for the physical clean-up is needed. Hand tools are used to scrape oil out

of sediment manually. Vacuum or pump trucks are used to suck up water and sediment contaminated with oil. Sorbents and booms are used to soak up oil. Finally, skimmers are used to pick up oil from the top of the water.

OSHA and the EPA are two government agencies that have the authority to use this equipment to clean-up the oil spill. The Coast Guard responds to spills that occur in offshore waters. The fire department responds to the spills that occur on land. If the public calls 911 to report the spill the fire department can be on the scene within five minutes. Crews use hazardous material clean-up equipment on the spill. This includes booms, a kitty-litter-like substance that soaks up oil called sorbents and absorbent pads to soak up the oil.[17] The fire department does not have training specifically for oil spills but for hazardous spills in general. There are also private contractors that can't respond immediately to the spill, but can go in later to help with clean-up.

There are a lot of needed equipment for the clean-up and monitoring of oil spills. For the fire department this equipment costs a few thousand dollars. For other companies like OSHA and the EPA, it costs a little more. They use more equipment and more advanced equipment than the fire department. However, the fire department is mainly there to contain the spill as quickly as possible while OSHA and the EPA are also in charge of restoration in the area.

First Response
Kennedy Cogswell

First response to oil spills is exactly what you would think it is the first people on scene at an oil spill and to focus on saving lives, property and the environment. Emergency response supports these efforts primarily by mitigating the spill and cleaning up or stabilizing the situation for later clean up purposes.

Local police and fire departments always have the authority to take actions to protect public health and property. But not all departments have the policy or budget that will allow them to clean-up a spill. Many local departments work with the companies that spill the materials and get them to clean it up. If the spiller can't be found or the companies refuse to pay for the clean-up many fire/police departments do not have environmental regulation policies in place to order the spiller to conduct the clean-up, or pay for it. That type of situation would typically be referred to the state, (MDEQ), or if the spill is big enough the EPA may get involved. MDEQ may ask for the EPAs assistance in these cases.

911 calls do not do directly to the EPA. It would be the spiller's responsibility to contact EPA directly or to call the National Response Center (1-800-424-8808), which is the Federal Government's 1-stop call center for all environmental spills. EPA regulations actually direct companies to call this number to report a spill if it is a certain amount or greater. For oil, the amount is any amount of oil that hits a navigable waterway, or threatens to release to a navigable waterway. Even a small oil spill in a creek that causes sheen must be reported. The National response center does make local and state notifications so that local and state partners know that a spill has occurred. [18]

First responders to an oil spill are most likely the fire department or local police. Once they get to a scene and assess the situation they call whoever they need to get the spill under

control such as the road commission for sand or to put up road blocks to protect the public and the environment. If the spill was in a residential area they would notify the public and if needed they would start an evacuation. After the fire department made sure the public was safe, then the county or spiller would hire a private contractor to manage the clean-up process.

The former Montcalm county emergency manager, Jerry McCoy, said he would recommend that it be required that the pipeline companies put more money towards replacing or better maintaining the pipelines.[19] First response is a very crucial role in efficiently and quickly containing and mitigating a spill. Certain procedures and precautions can improve the effectiveness and speed of response.

EPA Region 5
Nicholas Heilman

The Environmental Protection Agency (EPA) Region five consist of Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin and 35 Native American Tribes. Region five created an Area-Regional Contingency Plan, which identifies risks and resources for response and also sets policies for Federal responders to follow during an oil spill. The plan states that the Governor of each State in Region five is requested to designate a lead agency that will direct State-led response operations. Also, all States can provide local responders with technical expertise to assess environmental and public health threats and damage. In specific circumstances, states may provide additional response capabilities in the form of contractors and funding.

The Illinois Environmental Protection Agency (IEPA) has various responsibilities for responding to environmental emergencies within the State or its adjoining waters. IEPA is the State's lead agency for developing plans and coordinating action before, during, and after certain emergency situations. Within IEPA, the Emergency Response Unit (ERU) of the Office of Chemical Safety is responsible for coordinating the agency's response and ensuring appropriate cleanup of any subsequent environmental contamination. ERU collects information about environmental emergencies and responds directly and/or notifies other divisions within IEPA of needed action.

The Indiana Department of Environmental Management (IDEM) is the leading agency for the State in addressing spills and providing a 24-hour response capability. During a response, staff of the Emergency Response Section (ERS) of IDEM assume the role of technical advisors and provide on-scene assistance to the responsible party and to individuals or agencies involved in the response.

The Minnesota Pollution Control Agency's (MPCA) Emergency Response Team (ERT), includes 12 full-time members whose primary duty is to monitor the cleanup of spills and other emergency situations that pollute or threaten to pollute surface or ground water. The ERT may also perform field inspections at spill sites, provide technical assistance to responsible parties, or carry out enforcement actions for violation of State laws and rules.

The Ohio Environmental Protection Agency's (OEPA) spill response program is housed in the Emergency Response Unit (ERU), which is a part of the Division of Emergency and Remedial Response. This unit uses 15 spill responders to aid in chemical identification, containment, cleanup, public safety, and the identification of responsible parties. The Wisconsin Department of Natural Resources (WDNR) is the responsible agency for Wisconsin.

The major role of tribal government agencies during emergency incidents on a reservation is providing security for on-scene forces and equipment. For large incidents, help may be requested through Federal or State emergency management agencies. This includes establishing a local liaison with reservation hospitals, emergency services, and police, as well as restricting entrance to hazardous areas to only essential personnel.[20]

EPA Oil Spill Response Plan
Melissa Mikolowski

The Environmental Protection Agency (EPA) is the central response coordinator for large scale spills internally and externally that pose a significant threat to humans, the economy, and/or environment. In Michigan, organizations such as the Michigan Department of Environmental Quality (MDEQ) provide support and handle medium and small scale spills on their own. While both organizations follow the same process (plan/prepare, respond, clean-up), the authority allowed each organization varies due to legislation[21]. Based on this, the EPA is often called into restricted areas to manage spills that the MDEQ lacks the ability. One of these disasters was the Enbridge Oil Spill that occurred in the summer of 2010 in a river off of the Kalamazoo River.

The process for cleaning up oil spills varies depending on the situation; however, the outline for the Enbridge Oil Spill includes planning and enacting the following: a health and safety plan, pipeline repair work plan, sampling and analysis plan, QAPP, oil recovery and containment plan, source release area remediation plan, remediation plan for downstream impacted areas, and a waste treatment, transportation, and disposal plan[22]. Before any of the processes above can occur, though, the company that owns the pipelines must be forced to turn off the oil flow in order to prevent any further contamination. They also must contract specialized companies to provide equipment and employment to spills as well as comply with all requests from the EPA in the case of response, removal, and re-growth.

The EPA has the ability to command oil companies to discontinue flow and demand the companies to clean up the spill. This authority is given to the EPA through the federal government and falls under the Clean Water Act[23]. Additionally, this process requires assists from the National Response System, made up of a set of teams and coordinators.

Three major teams that are called upon are the On-Scene Coordinators (OSC), National Response Teams (NRT), and the Regional Response Teams (RRT). The National Response System was not fully developed until 1968. Up to that point, the U.S. had not even considered what would happen if a hazardous chemical was spilled. It was only when a 970-foot tanker spilled 33 million gallons of crude oil in England that the U.S. began to develop a plan that is today the National Response System. The National Response System plan for oil spills has been developed, but in certain states it needs to be perfected.

The next big part of the Response System is the Regional Response Teams. There are 13 Regional Response Teams in the U.S. and they each represent a part of the country. They assist the OSCs when called upon and are allowed to go straight to the site of the spill. Like the OSCs, the RRTs have four main responsibilities: response, planning, training, and coordination. People on the Regional Response Team do not respond to the spills directly like the OSCs do; however, they are asked to provide equipment or technical advice to help the response. The Regional Response Teams also exchange information with other agencies about their ability to respond to the spill. Each Regional Response Team has a Contingency Plan so that the federal and state agencies are clear in what they have to do in an actual spill. After the spill has been cleaned up,

the RRT goes over the reports that the OSCs have brought in so they can improve problem areas in the plan[24].

Oil Spill Response: Ohio and Indiana
Samantha Bellairs

Many States have different regulations and plans for oil spill response. Examining what other states do to protect and clean the environment is a good way to research what Michigan could adopt, and how we could handle oil spills and related emergencies.

Ohio, one of Michigan's nearest neighbors, deals with their emergencies differently. The Ohio Environmental Protection Agency, or the Ohio EPA, is the agency in Ohio that handles the cleanup and management of hazardous materials like oil.[25] In cases of emergencies they have On Scene Coordinators who are on the scene to help first responders address environmental emergencies and pollution incidents, including chemical and petroleum or oil spills.[26] Ohio also has spill prevention, control and countermeasure plan or the SPCC plan. Farms and other facilities that use oil and other environmentally harmful chemicals must follow this plan so that they are prepared for a spill should one happen.[27]

The Indiana Department of Environmental Management is the agency that is responsible for the emergency cleanups in Indiana. Instead of trucking the supplies in from hours away, after a spill has occurred, they locate potential spill spots and store the cleanup and containment equipment nearby.[28] These emergency kits are kept where they will be dry and easily accessible if ever needed. These sites are well marked as well to be sure that they know where the supplies are when it comes time to use it. Response plans are shared with local emergency response teams, and those who are trained respond according to the plan.[29]

Oil Spill Response: Minnesota and Wisconsin
Lucia Reeck

Before 1968 there was no National Response System to clean up hazardous waste spills. Today, there are thirteen Regional Response Teams in the United States. Minnesota and Wisconsin are in Region 5[30] and have emergency response plans in place.

The Minnesota Spill Bill (Minn. Stats. 115E) requires any facility handling or transporting oil or any hazardous substances to have an emergency response plan.[31] The purpose of the Spill Bill and the Area Contingency Plan are to organize roles and responsibilities in the occurrence of a spill, to identify any environmentally sensitive areas, and to have strategies for responding to spills.[32] At both the sub-area and state level the plans go into detail defining roles and responsibilities for all parties involved.[33]

How did the Minnesota Pollution Control Agency (MPCA) form their spill prevention plan for companies? The MPCA suggested that all companies provide basic training of personnel and a map of the facility, inside and out.[34] This way, if there was a spill, the company would be aware of how the environment would be affected and how to respond.[35] The main idea is to have a good plan in place, know how the substances will be stored and after staff is trained, practice for a spill.[36]

In Minnesota, there are five basic steps recommended to a company if a hazardous substance is spilled. The first is to assess the spill and see what safety precautions need to be taken depending on what has been spilled and to stop the source of the spill. Next, call enhanced 911 if the public is affected[37] and contain the spilled material. If necessary, report the spill to the local Minnesota Duty Officer at any time.[38] Finally, the company needs to clean up the spilled material and properly dispose of it appropriately.[39] [40]

Like Minnesota, Wisconsin has its own response system for dealing with hazardous materials. The Emergency Support Function (ESF) 10 is similar to the Minnesota Spill Bill, and outlines how to prepare for a spill and how to respond if oil or another hazardous material were to be spilled.[41] The state's emergency management division falls under the Department of Military Affairs which is one of the many state agencies involved in spill response coordination. The state's Department of Natural Resources (DNR) is the lead state agency on federal, state, county and tribal lands. They provide support through their spill coordinators located in each regional DNR office.[42]

The state of Wisconsin has a detailed plan of resources to call upon in the case of a spill. Detailed maps, training and exercise programs, public education programs and a plan for coordination of responders have all been recommended in the plan should an oil or hazardous material spill occur. The plan does not have a published sequential outline at the local level for coordinating response to a spill. Companies with facilities and potentially hazardous materials located in a given area are required to have their own emergency plan included in their county's strategic Plan.[43] There are, however, no publically published plans available for how individual companies should avoid or prepare for a spill, should one occur.

If there is a spill, the DNR must immediately be contacted.[44] They have spill coordinators in five parts of the state. By calling one phone number, many state and local agencies are activated and work together to clean up and contain the spill.[45] If the spill cannot be cleaned up and contained at the state and local level, then the EPA will be called for assistance. The EPA's On-Scene Coordinators work with the local response system and state agencies to coordinate efforts and resources.[46]

Both Minnesota and Wisconsin have developed Emergency Response Plans for oil spills at the state level. These plans dovetail with responsibilities of the regional coordinators at the Environmental Protection Agency (EPA.) At the Minneapolis/St. Paul sub-area level, which has been identified as more vulnerable, Minnesota's Emergency Response Plan is very detailed in terms of identifying which agencies are responsible for which parts of the response plan. Minnesota's emergency response plan also outlines the responsibilities of individual companies with hazardous materials to both prevent and respond to oil spills.[47]/[48] No such plans for Wisconsin's companies were found. Nor does Wisconsin's Emergency Response Plan spell out roles of local responders should a spill occur.

From the materials available for assessing the two state's Emergency Response Plans for oil spills, Minnesota appears to have done a more thorough job of clearly planning for and identifying resources at all levels who can prepare for and respond to an emergency spill.

DEQ Response Plan
Parker Foote

The State of Michigan is the only state in Region 5 without any on site coordination of oil spill responses. Without having the ability to take action as soon as possible limits the efficiency of the overall cleanup process. Not only does the limitation of access to the spill site slow down the reaction time; home/property owners have the ability to deny any entrance to their property until a warrant is provided by the state. The DEQ does not have the required equipment and special training needed to enter the "hot zones". ~~The necessary equipment is not available in the state.~~ Without the ability to enter the spill sites, other corporations must be guided through the cleanup process by the DEQ through other forms of communications outside of the spill. The usual time for cleanup and hazmat contractors to arrive on site could be near 3-4 hours, thus limiting the response time even longer, resulting in more environmental damages. The Michigan Department of Environmental Quality is not the first responders in the act of an oil spill; they act more as coordinator the activities outside the hot zones with the assistance of an on-scene incident commander.

Impact of Oil Spills on the Environment
Samantha Ellison

Oil spills can have a devastating effect on natural resources, which could have consequences on our state. An oil spill can contaminate the soil, killing off plants and crops. The oil can pollute waterways and kill fish or contaminate underground water sources. Oil spills are something that cannot be ignored; otherwise the people and natural resources of our state could be extremely impacted.

In Michigan, many oil spills occur on land during oil transportation. When a transportation line breaks, it can release a large amount of oil into the soil. This oil then has the ability to spread far through the soil, quickly contaminating a very large area. The oil in the soil can get into fields and kill the crops, by blocking out sunlight, which could extremely harm the economy of that area. The contaminated soil can also kill local plant life that could take hundreds of years to replace. The process to clean up soil that has been contaminated in an oil spill is also extremely difficult. Some oil spills can even contain volatile chemicals. When these chemicals are on the soil's surface, they have the ability to evaporate and become airborne. Still other types of chemicals have the ability to stay in the soil for decades.[49] The effect that an oil spill can have on an area's crops and plant life can have lasting effects on our economy and local ecosystems, both of which desperately need to be protected.

When the oil flows into to ground, often times it spreads out has the chance of contaminating water ways, similar to what happened in the Enbridge oil spill near the Kalamazoo River. When the oil goes into this waterway, it was able to travel at a much faster rate. This made the oil extremely difficult to control and contain. Water with oil in it can be harmful to humans, which puts the residents near these polluted waterways at risk. This contaminated water is a major problem to the fish species as well. Some fish can die from the oil in the water and often time's people are not allowed to eat fish caught from water near oil spills. A large number of dead animals or water foliage can cause an increase in the amount of bacteria in the water, which can lower the pH level. Oil in water often times also forms larges masses of hardened oil and debris clogging the waterway. These large masses of oil can elevate the water

temperature.[50] If an oil spill were to happen near local fishing grounds, fisheries could be shut down for months.

The effects that oil spills can have cannot be ignored, because they have the potential to affect so many areas of our environment. Oil spills on land can kill of crop and local plant life. In addition, an oil spill in the water can contaminate miles of water. Oil spills can even hurt wildlife and humans near the spills sites. Now is the time to work on a plan to better regulate how oil spills are controlled, before another oil spill occurs.

Impact of Oil Spills on Plants
By Zachary Childs

When the public thinks of an oil spill, images of waterfowl and fish drenched in a black sludge may come to mind. Many don't think of the plants and their basic functions that are obstructed by the oil that intrudes on them. The functions that are being destroyed not only hurt the plant but everyone else around them.

One of the most basic functions that are impeded is photosynthesis, the use of solar radiation to convert water and carbon dioxide into nutrients for the plant to survive. This is important to humans and animals as well because the effects of photosynthesis, the production of oxygen, are mandatory for all life on earth. Oil covers the leaves of the plant; leaves are the area of production for photosynthesis, when solar radiation cannot enter the leaf the whole process is hindered.[51]

There are other ways that a plant may have their photosynthesis hindered. Not only does the presence of oOil in water kill the fish and other aquatic life but it also hurts plants on the shoreline. This can be worse than actually covering the plant in oil. When the oil enters the water it causes a change of pH in the water, a change in pH causes a stress reaction in the plant halting photosynthesis' production. An oil spill also causes an excess amount of bacteria in the water which also has the same effect on plants as the pH changes.[52]

Even after a spill is cleaned up there may be residue in the water or in the soil, it ?is difficult to remove these without the use of chemicals that may also be just as dangerous as the oil. Removing the residue is much easier in water then it is in soil. Luckily there have been processes found that make clean up easier and safer for all. One of the processes known as biodegradation includes a micro-organism that can digest the oil residue then dies off and then provides nutrients for the plants. It is safe and beneficial to the environment and the creatures living in it. There is also a process known as phytoremediation, this is a process where a plant is grown that can degrade the residue to a harmless level. The soil can then be used to grow other more delicate specimens. These processes have been used to clean an excess of 22,000 tons of contaminated soil and were created by a Lithuanian company known as Biocentras. The processes are exclusively used in Lithuania now but may provide a great alternative to the world in the future.[53]

In some cases not only does the oil harm the plant life but cleanup procedures do as well. Many times, if the response is not fast enough and the oil is allowed to soak into the soil, the soil then has to be dug up to clean the oil out of it. The digging up of soil destroys the plant life on that plot and often does not remove the toxins due to the oil being saturated so deeply. In some places the food cycle has been disturbed for over a decade. Sometimes the worst damage comes from trying too hard to clean up the spill. In the 1978 spill of the Amoco Cadiz tanker, cleanup

crews scraped almost 20 inches of highly polluted sediment off the top of the most affected wetlands. They also deepened natural tidal channels to improve flushing; as a result the areas that were dug out are still missing about 40% of the vegetation, while areas that were left to more natural cleanup have recovered almost completely. The plants broke down the remaining toxins after lighter cleanup and most of the vegetation has been restored.[54]

Plants may be the most import organism affected by the spills and we need to accommodate our reaction time and cleanup processes to help sustain their life as well as possible. New technologies and breakthroughs in science have made that more possible; we must now utilize them to help our ecosystems for the better and provide a cleaner and more efficient tomorrow.

Effect of Oil Spills on Animals
Beth Troxell

Not only birds are affected by oil spills. Other animals such as marine life can be affected too, even by small spills. Animals covered in oil at the beginning of a spill may be affected differently from animals encountering the oil later, for example, earlier the oil may be more poisonous, so the wildlife affected early will take in more of the toxins. The weather conditions can reduce or increase the likelihood of oil causing damage to the environment and wildlife. Because there are many different types of oils, there are many different kinds of spills, which lead to many different affects.

The effects of the oil spill depend on:

- The type of spill
- The location of spill
- The species of wildlife that are living in area of spill
- The timing of breeding cycles and seasonal migration in relation to when the spill occurs
- And the weather during and after the spill

Effects on Animals:

Some of the many different negative effects that oil can have on animals are; hypothermia, loss of body weight, becoming easier prey, drowning, dehydration, starvation, disguise of necessary scents, damage to immune system sometimes causing secondary bacterial of fungal infections, poisoning of young through feeding, blindness, damage to airways and lungs (congestion, pneumonia, emphysema), irritation or ulceration of skin, mouth, or nasal cavities, damage to red blood cells, organ damage and failure, damage to a bird's adrenal tissue, decrease in the thickness of egg shells, stress, damage to fish egg, larvae and young fish, contamination of beaches where turtles live, damage to estuaries, coral reefs, sea grass and mangrove habitats, and finally the tainting of fish, crustaceans, mollusks, and algae. [55]

Impact of Oil Spills on Humans and the Economy
Sam Owens

There are various maladies which are caused when oil pipelines are breached. Amongst these are the casualties wrought on the people nearby. Oil, and the chemicals in conjunction with it, can cause havoc with local homeowners and businesses.

Looking at the consequences of the ~~BP~~ Deepwater Horizon oil spill, the economic and human impacts are clear. It was estimated that "between 840,000 to 1.7 million gallons of oil are leaking into the Gulf each day."[56] This hit was felt in pocketbooks across America, as the price of gas rose due to the shortage caused by the leak. Not only did the company feel the sting of lost profits and remediation costs, companies and individuals down the line felt it as well.

The breach of the pipeline resounded in companies other than gas corporations and consumers; it also resulted in a crippling of the food industry. An oyster farmer was reported as declaring that "if the leak is not stopped soon and his oyster beds are contaminated, he runs the risk of losing $4,500 a day."[57] A Louisiana newspaper stated "Louisiana seafood production has an estimated economic impact of $2.4 billion."[58] The collateral effects of oil spills cause irreparable damage throughout the economy, directly affecting individuals and organizations outside of the oil companies and related businesses.

According to the Environmental Pollution Centers' website[59], there is a plethora of effects derived from oil spills that impact human health and the economy. It divides the human health effects into two categories. The first being direct exposure to the spill, proceeding to the second being the indirect exposure. The site states that the dangers range from minor illness, to the risk of cancers, due to the gaseous oil compounds that are breathed in and/or skin absorption from contaminated soils, both of which are considered direct exposure. Whereas, indirect exposure is classified as the "consumption of contaminated food or water,"[60] such as, eating fish from a contaminated waterway. Some compounds can be absorbed continually into the fish and stay there, meaning there is a constant influx of contaminate into the fish and none of it leaves.

Economic effects can be seen as follows: long term ceasing of activities, reduction of property value and tourism, disturbance of traffic, and recreation and aesthetic impact. Long term ceasing of activity refers to any situation where the spill causes an activity to be unable to occur, such as, fishing and shrimping expeditions in the gulf during the BP oil spill. Reduction of property value happens in two different ways, the spill directly affecting your property, and the spill affecting a property adjacent to your own. Oil damages the soil and heavily limits what may be grown in the affected areas, as well as likely killing what is already there. Spills also affect the surrounding values depending on how likely the oil is to spread to those plots. Disturbance of traffic applies more toward waterways, thus affecting travel as well as import and export trade. As for recreation and aesthetic impact, the article states "the visible effects of oil spill (e.g., oil slick, sheens) on coast waters, shorelines and beaches, wetlands, etc. When more serious, the complete closure of such recreational areas to general public enjoyment may also occur, at least temporary, until the spill is removed or cleanup."[61]

On Scene Coordinator Details
Sam Owens

The true cost of implementing an on scene coordinator will not be known until the position exists. Currently, we are able to figure out the rough start-up costs, running costs, and possible funding sources for the position. Main concerns include: additional employees, training costs, the cost of equipment, and funding.

Multiple employees from the Michigan Department of Environmental Quality have stated that there would be no need to hire additional employees.[62] They asserted that there were current employees within the MDEQ that already held the necessary skills, training, and equipment for the position. Also in congruence, they stated that the job itself would be too narrow for the expanse of a completely new position, claiming that it should be an expansion onto a current position. The expansion would increase the responsibility and jurisdiction of the given employee without the additive costs of a new hire.

Training details include: forty hour initial hazardous waste training with an annual eight hour refresher, initial respirator training with annual fit test and refresher. The forty hour hazardous waste training and its annual refresher course are existing requirements already required of MDEQ Remediation and Redevelopment employees. Eastern Michigan University offers a four day training session for the use of half mask respirators, which complies with the Environmental Protection Agencies level C respiratory standard. Training at EMU is eight hundred dollars per person, this cost includes all materials and two meals a day.[63] Costs of a half mask respirator range from twenty dollars up to one hundred and fifty dollars, not including the price of the filter(s). An additional piece of equipment, as suggested by the MDEQ, would be a set of radios costing from thirty dollars to upwards of one hundred and fifty dollars. Assuming the highest seen prices, the initial investment on training and equipment totals roughly one thousand one hundred and fifty dollars. These estimates do not include the other pieces required as defined by the EPA's Level C protection requirements, other requisite equipment would entail: Chemical resistant clothing, gloves, boots (steel toe and shank).[64]

The overall additives of implementing this position will be unknown as there is no accurate way to judge its exact impact. However, a rough estimate of possible, theoretical impact can be determined. If oil in pipelines moves at roughly three to eight miles per hour, an average of five miles per hour, then it may be believed that for every hour of response time saved, five miles worth of oil will be prevented from adding to the spill.

The Michigan 4-H Youth Conservation Council would like to set forth the following recommendations:

- Adopt an oil spill response policy similar to the EPA's
- Appoint an on-scene MDEQ coordinator to manage emergency spills
- Provide the MDEQ the authority to waive permits and regulations that inhibit their response to a spill
- Provide training and equipment for DEQ responders of the spill

The council would like to promote these recommendations to protect the economy and the environment. These would allow responders to react more efficiently and prevent more significant damage from oil spills. In conclusion to the testimony as presented today, the council would like to thank you for your time and consideration.

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